ART 34 AMDT

What is claimed:

1. A probe (100, 200, 300, 400, 500, 600) for the measurement of the oxygen activity of metal melts, in particular steel melts,

comprising a reference substance (2) of known oxygen activity in electrically conducting contact (3) with a measuring device;

and comprising a solid electrolyte predominantly oxygen ion conducting and negligibly electron conducting at high temperatures and separating the reference substance (2) from the metal melt and having an entry surface (4) for oxygen ions which is in contact with the metal melt,

characterized in that the entry surface (4) of the probe ready for operation is covered by a functional foil arrangement (10,20) in close contact to the entry surface(4) and tightly pressed against the entry surface (4) over ist extension from the outside by mechanical means.

2. A probe according to claim 1, wherein the foil arrangement (10,20) comprises at least one foil (6) oxidizable by the oxygen drawn into the melt during immersion.

3. A probe according to claim 2, wherein the foil (6) is made from at least one of the groups of aluminium, titanium, tin or magnesium material

ART 34 AMDT

4. A probe according to any of the claims 1 to 3, wherein the foil arrangement (20) comprises at least a second foil (9) at least partly covering the first foil on ist inner or outer side.

5. A probe according to claim 4, wherein the material of the second foil when melting due to the contact with the metal melt enhances the wettability of the entry surface (4) of the solid electrolyte (11).

6. A probe according to claim 5, wherein the second foil (9) consists of a copper material.

7. A probe according to any of the claims 1 to 6, wherein the solid electrolyte is provided in the form of a material having an essentially plane formed front wall at the end of a refractory small tubelet (1) and the foil arrangement (10, 20) extends in front of said end wall.

8. A probe according to any of the claims 1 to 6, wherein the solid electrolyte is provided in the form of a coating on a carrier pin or a small carrier tubelet and wherein the foil arrangement (10,20) totally and tightly surrounds the outer periphery of the solid electrolyte.

9. A probe according to any of the claims 1 to 7, wherein the solid electrolyte is provided in the form of a small tubelet (1) that is immersed into the metal melt and is

ART 34 AMDT

closed at the end to be immersed and the reference substance (2) is located in the interior of the small tubelet and the foil arrangement (10,20) totally and tightly surrounds the outer periphery of the small tubelet (1).

10. A probe according to claim 9, wherein said means comprise a binder located between the entry surface (4) and the foil arrangement (10,20) and disintegrating when in contact with the metal melt .

11. A probe according to claim 9, wherein said means press the foil arrangement (10,20) against the entry surface (4) elastically.

12. A probe according to claim 11, wherein said means comprise an elastomeric hose (8,18) tightly surrounding the foil arrangement (10,20) on the outer periphery of the small tubelet (1) constituting the solid electrolyte.

13. A probe according to claim 12, characterized in that the hose (8, 18) first has a greater diameter than the foil arrangement (10,20) surrounding the small tubelet (1) and that the hose is shrinkable in its radial diameter after being positioned longitudinally over the foil arrangement (10,20).

14. Probe according to claim 13, wherein the hose (8,18) is made of a material with a thermoactive shape memory.

ART 34 AMDT

15. A method of producing a probe (100, 200, 300, 400, 500) for the measurement of oxygen activity of metal melts, in particular steel melts, wherein the probe comprises a reference substance (2) of known oxygen activity in electrically conducting contact (3) with a measuring device and comprising a solid electrolyte that is predominantly oxygen conducting at high temperatures and negligibly electron conducting and intended to be immersed into the metal melt and having a entry surface for oxygen ions, wherein the entry surface (4) is tightly covered by a functional foil arrangement (10,20); wherein over the foil arrangement (10,20) on the entry surface (4) an elastomeric hose (8,18) is positioned longitudinally and wherein then a hose (8,18) is shrunk onto the foil arrangement (10,20) causing a radial tension leading to a close contact between the foil arrangement (10,20) and the entry surface (4).

16. A method according to claim 15, wherein the hose (8,18) is made out of a thermoactive shape memory material and the hose (8,18) is heated when in position.